

CLAIMS

1. A tire noise reducing system comprising
a wheel rim,
a pneumatic tire to be mounted on the wheel rim to form an
annular tire hollow, and
a noise damper to be disposed in the annular tire hollow,
wherein

the noise damper is a liquid under use conditions, and the
noise damper has a certain volume being capable of changing the
cross sectional area of the annular tire hollow irregularly in the
circumferential direction during rotating.

2. The tire noise reducing system according to claim 1,
wherein

the liquid noise damper is an emulsion of at least one
kind of polymer.

3. The tire noise reducing system according to claim 2,
wherein

said at least one kind of polymer is at least one kind of
elastomer.

4. The tire noise reducing system according to claim 2,
wherein

said at least one kind of polymer is at least one kind of
synthetic resin.

5. The tire noise reducing system according to claim 2,
wherein

said at least one kind of polymer is at least one kind of
elastomer and at least one kind of synthetic resin.

6. The tire noise reducing system according to claim 1,
wherein

the liquid noise damper is a foamable emulsion of at least one kind of polymer.

7. The tire noise reducing system according to claim 1, wherein

the liquid noise damper is a foamable water solution of at least one kind of surfactant.

8. The tire noise reducing system according to claim 7, wherein

the liquid noise damper includes a foam stabilizer.

9. The tire noise reducing system according claim 6, 7 or 8, which further comprises an apparatus for injecting the foamable liquid damper into the tire hollow, the apparatus comprises

a container for the foamable liquid damper,

a high-pressure gas source to let the foamable liquid damper from the container, and

a nozzle for discharging a mixture of the liquid damper and high-pressure gas to be injected into the tire hollow.

10. The tire noise reducing system according claim 9, wherein said apparatus comprises

a passageway for high-pressure gas which extends from the high-pressure gas source to the container and is opened in the lower part of the inside of the container so as to open in the foamable liquid damper, and

a passageway for said mixture of the liquid damper and high-pressure gas which extends from the discharging nozzle into the inside of the container so as to open above the liquid level of the foamable liquid damper.

11. The tire noise reducing system according claim 9, wherein said apparatus comprises

a spray chamber, in which a spray nozzle and a gas nozzle are disposed, and to which said discharging nozzle is opened,

a passageway for the liquid damper which extends from the spray nozzle into the inside of the container and is opened in the lower part of the container so as to open in the foamable liquid damper, and

said gas nozzle connected to the high-pressure gas source and opened so as to blow high-pressure air against the spray nozzle.

12. The tire noise reducing system according claim 9, wherein said high-pressure gas source is a liquefied gas said container contains the liquid damper and said liquefied gas,

said apparatus comprises a passageway for a mixture of the liquid damper and liquefied gas which extends from said discharging nozzle into the inside of the container and is opened in the lower part of the container.